

REMARKS

Upon entry of the present amendment, claims 1-5, 7-10 and 13-23 will be pending in the application, of which claims 8-10 are withdrawn.

Claims 1 and 7 have been amended to clarify, in terms of formula, the names of the specified functional groups. One of ordinary skill in the art, in light of the specification, will recognize that the terms for the various functional groups have the specified formulas.

New claims 17 to 23 have been added to further define the claimed invention, as further explained below.

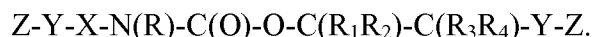
No new matter has been introduced by the foregoing amendments and new claims.

Amendments to, cancellation of, and additions to, the claims, as set forth above, are made in order to streamline prosecution in this case by limiting examination and argument to certain claimed embodiments that presently are considered to be of immediate commercial significance. Amendment or cancellation of the claims is not in any manner intended to, and should not be construed to, waive Applicants' right in the future to seek such unamended or cancelled subject matter, or similar matter (whether in equivalent, broader, or narrower form) in the present application, and any continuation, divisional, continuation-in-part, RCE, or any other application claiming priority to or through the present application, nor in any manner to indicate an intention, expressed or implied, to surrender any equivalent to the claims as pending after such amendments or cancellations.

Reconsideration is respectfully requested in view of the foregoing amendments and following remarks.

1. Rejection of claims 1-5, 7-10, and 13-16 under 35 U.S.C. §102(b) as anticipated by U.S. Patent No. 4,849,321 to Hung et al., hereafter "Hung".

The Examiner states that Hung discloses a compound that is within formula I of Claim 1, for a compound when n is 1 and the accompanying proviso that the radical R and/or the radical X are/is substituted by at least one substituent of the general formula I. With this proviso, formula I can be represented by the following formula:



(09/15/2008 Office Action, page 3, first and third paragraphs.)

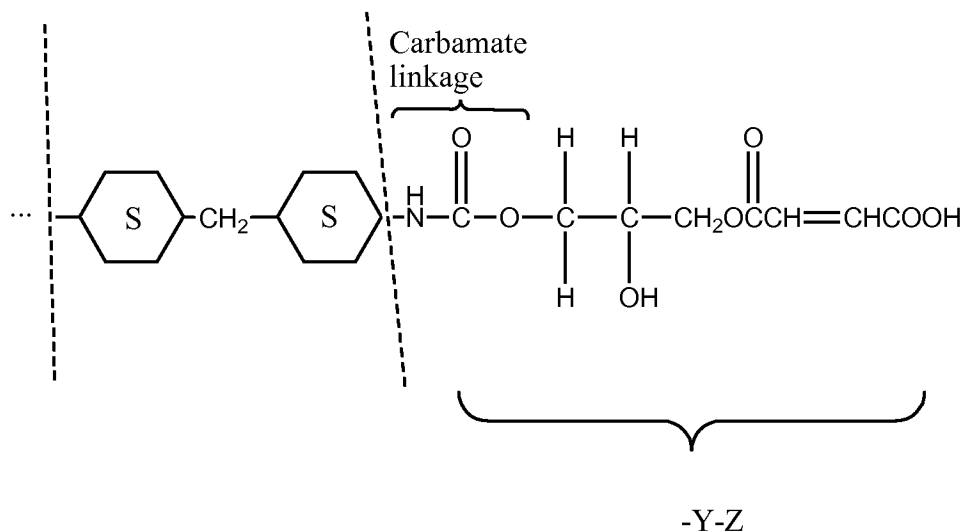
The Examiner then alleges that Hung's Compound III anticipates the above formula. The Examiner uses an illustration of a structural formula stated as having been taken from columns 5- 6 and columns 13-14 of Hung. (09/15/2008 Office Action, page 3, lines 7-8.) However, the first structural formula in columns 5-6 of Hung differs from the second structural formula in columns 13-14 of Hung in two respects.

First, the terminal -CH=CHCOOH on the right side of the first structure was changed to -CHCHCOOH in the second structure. This change in the second structure appears to be a typo that was reproduced in the Office Action in the formula illustrated on page 3, last paragraph.

Second, a -CHC(CH₃)H- group in the middle of the left side of the first structure was changed to -CH₂C(CH₃)H- in the second structure. In this respect, the second structure is believed to be correct, as reproduced in the formula illustrated on page 3, last paragraph of the Office Action. This last point clarifies some difficulties in the previous prosecution of this application.

Applicants submit the following structure, which is believed to correctly illustrate

the right side of the compound cited by the Examiner in the Office Action.



Applicants appreciate the detailed analysis provided by the Examiner and have consequently clarified the structural differences of the present compounds from those disclosed by Hung. As currently amended, claim 1 recites that Y is a divalent, linking functional group selected from the group consisting of ether (-O-), carboxylate (-OC(=O)-), carbonate (-O(C=O)O-), phosphate (-OP(=O)(OH)O-), phosphonate (-OP(=O)(OH)-), phosphite ester (-OPH(=O)O-), and sulfonate (-OS(=O)(=O)-) groups. Moreover, this Y group is directly attached to the X group, since claim 1 states that the radical X is substituted by at least one substituent of “Z-Y-” in which “-” conventionally represents a linking bond.

It is respectfully submitted that, according to the Examiner's interpretation in the above-illustrated structure, the -Y-Z group on the right side in Hung's formula does not meet independent claim 1 as currently amended. The Examiner's interpretation of the -Y-Z group in Hung's formula involves a carbamate group, and not a functional group that (as clarified by the amendment to claim 1) has the formula of an ether, carboxylate, carbonate, phosphate, phosphonate, phosphite ester, or sulfonate group. Since Hung's Compound III does not teach any of the foregoing groups, it does not anticipate the present claims.

Specifically, the -Y-Z group on the right side of the illustrated structure of Compound III from Hung is linked to -X- using a carbamate linkage. Specifically, Y in Hung's Compound III is a carbamate, not one of the functional groups required by the present claims.

Moreover, the teachings of Hung are contrary to the purpose of the present invention. Compound III is synthesized from a polyisocyanate, namely the Compound I on the left side of column 5. This produces the carbamate functional group in Compound III. In contrast, as explained in the original application, the present invention is directed to novel compounds which contain urethane groups, which can be cured by UV radiation or electron beams, which have at least the same advantageous level of technological properties as the existing urethane acrylates, and which can be prepared without the use of polyisocyanates. The numerous examples demonstrate that compounds of the present invention can be produced in a purity greater than 99%, which compounds were found to be outstandingly suitable for preparing thermally curable and UV-curable (dual-cure) clearcoat materials.

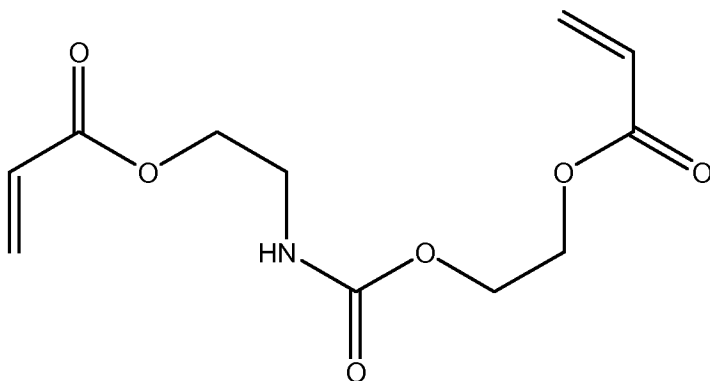
In view of the above, Applicants respectfully assert that the present claims are patentable over Hung under 35 U.S.C. 102(b). Withdrawal of this rejection is respectfully requested.

2. New Claims

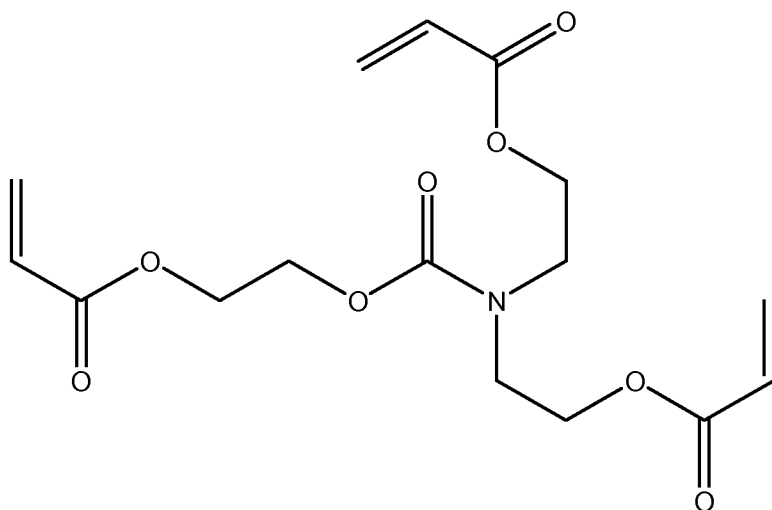
New claims 17-23 further define the invention. New independent claim 17 incorporates the limitation of both independent claim 1 and dependent claim 7, that is, requires that the Y group is a carboxylate group. New claim 18 recites, with respect to the independent claim 17, that n is 1 or 2 (as supported at least by page 9, lines 20-22), that (when X is monovalent organic radical) X is an alkyl, cycloalkyl, or alkyl cycloalkyl group (as supported at least by page 8, lines 23-25), that (when X is a divalent organic radical) X is an alkanediyl, cycloalkanediyl, or alkanecycloalkaneydiyl group (as supported at least by page 10, lines 13-15), and R¹, R², R³, and R⁴ are each hydrogen or a monovalent substituted or unsubstituted alkyl, cycloalkyl, or cycloalkyl group (as supported at least by page 11, lines 17-21).

Claim 19 further specifies that the X group, as supported by original claim 4, has formula III. New claim 20 states that the Z group is a vinyl, 1-methylvinyl, 1-ethylvinyl, propene-1-yl, styryl, cyclohexenyl, endomethylene-cyclohexyl, norbornenyl or dicyclopentadienyl group, as supported at least by page 13, lines 12-16. New claim 21, supported by previous claim 20, specifies that the Z group is a vinyl group. New claim 22 states that the X, R, R¹, R², R³, and R⁴ groups do not inhibit or prematurely initiate the curing of the compounds of the invention, as supported at least by page 14, lines 4-8. New claim 23 states that the compound is selected from the group consisting of N-(2-acryloyloxyethyl)-2'-acryloyloxyethyl carbamate, N-(2-acryloyloxyethyl)-3'-acryloyloxypropyl carbamate, N-(2-acryloyloxyethyl)-4'-acryloyloxybutyl carbamate, 1,2-bis(N-(2-acryloyloxyethyloxycarbonyl-amino)ethane, 1,3-bis(N-2-acryloyloxyethyloxycarbonyl-amino)propane, 1,6-bis(N-2-acryloyloxyethyloxycarbonyl-amino)hexane, 1,3-bis(N-2-acryloyloxyethyloxycarbonylamino-methyl)cyclohexane, and N,N-bis(2-acryloyloxyethyl)-2'-acryloyloxyethyl carbamate.

The formulas for these eight compounds, respectively Compounds I-1 to I-8, are consistent with all the pending claims. For example, the first and last specified compounds (I-1 and I-8) are represented by the following formulas:



N-(2-acryloyloxyethyl)-2'-acryloyloxyethyl carbamate



N,N-bis(2-acryloyloxyethyl)-2'-acryloyloxyethyl carbamate

In such structures, it can be seen that n is 1, Z is a vinyl group, Y is a carboxylate group, X is an ethyl group, R is either hydrogen (in the first structure) or an organic radical that is another Z - Y - group (in the second structure), and R^1 to R^4 are hydrogens.

CONCLUSION

Applicants respectfully submit that the Application and pending claims are patentable in view of the foregoing remarks. A Notice of Allowance is respectfully requested. As always, the Examiner is encouraged to contact the Undersigned by telephone if direct conversation would be helpful.

Respectfully Submitted,

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